herpes viruses, SARS, agents of bioterrorism including *Bacillus anthracis* (anthrax) and the smallpox virus, and nosocomial pathogens including MRSA. The lecture concludes with a futuristic view on evolving technology including miniaturized testing devices that can be used by patients to test for a variety of infectious disease pathogens. Additionally the importance of both bioinformatics (e.g, assessing the results of nucleic acid sequencing) and clinical informatics (e.g., combining multiple data points from clinical laboratory testing and physiological data for single patients) is stressed.

KS 12

ANTIMICROBIAL STEWARDSHIP PROGRAM IN HOSPITALS: TAIWAN EXPERIENCE

Shan-Chwen Chang. *Division of Infectious Disease, National Taiwan University Hospital, Taipei, Taiwan*

Antimicrobial resistance has become a serious problem all over the world. According to a recent WHO report on surveillance, antimicrobial resistance has been a global health security threat that requires concerted cross-sectional action by governments and society as a whole. Due to the wider recognition of the adverse clinical, healthcare, and societal outcome associated with antimicrobial resistance, there has been an increased emphasis on the importance of rational and appropriate antimicrobial use, which can be achieved through antimicrobial stewardship. There are examples of antimicrobial stewardship programs (ASPs) from different parts of the world demonstrated the improved antimicrobial prescribing practice can reduce antimicrobial resistance or healthcare-associated infections and improve clinical outcomes. However, the extent to which interventions could be implemented into the hospital or healthcare system also varied.

In Taiwan, there has been several individual hospitals demonstrated successful program to control the antimicrobial usage in the past. In 2013, Taiwan CDC began to set up a national ASP. Initially, 7 hospitals were selected as demonstration centers and the exact contents of the ASP were discussed and set up by these hospitals and Taiwan CDC in 2013. They also selected practical indicators for collection from the hospitals to show the outcome of the ASP.

In 2014, 54 other hospitals voluntarily participated the ASP under the leading of the 7 demonstration centers. There will be more other hospitals participating the ASP in 2015. During past 2 years, the national ASP tried to integrate the leadership commitment, accountability of the leader physicians, participation of other healthcare professions, implementation of recommended actions, monitoring antibiotic prescribing and resistance patterns, regular reporting the antibiotic use, and educating clinicians and general population. With these, some improvements in laboratory reporting time, antimicrobial usage and reduced resistance in some bacteria were demonstrated. Details will be presented.

KS 13

PREVENTING CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS IN AN ERA OF ZERO TOLERANCE

William R. Jarvis, M.D. *Jason and Jarvis Associates, LLC, Hilton Head Island, South Carolina, United States*

Central line-associated bloodstream infections (CLA-BSIs) are a major cause of morbidity and mortality worldwide. Studies of the pathogenesis of CLA-BSIs have shown that extraluminal colonization is the route of early infections and intraluminal colonization is the route of later infections. Insertion and maintenance bundles have been developed to reduce the risk of such extraluminal and intraluminal contamination, respectively. Insertion bundles include: use of a checklist, hand hygiene, a catheter insertion kit/cart, maximum barrier precautions, a closed intravenous systems, chlorhexidine with alcohol for skin antisepsis, and avoiding femoral lines. Maintenance bundles have included use of the chlorhexidine-impregnated sponge dressing, the safest needleless connector, antiseptic or antimicrobial impregnated catheters, antimicrobial or antiseptic locks or flushes, chlorhexidine bathing of intensive care unit (ICU) patients, and scrub of the hub of the connector for 15-30 seconds with chlorhexidine or 70% alcohol. Use of such insertion and maintenance bundles have been associated with significant reductions in CLA-BSIs, including achieving a zero rate at some hospitals and a 58% reduction in CLA-BSIs in U.S. ICUs nationwide between 2001 and 2009. These data show that use of insertion and maintenance bundles can significantly reduce the risk of CLA-BSIs and should be fully implemented worldwide. In this presentation, the data leading to the recommendations of the elements of the insertion and maintenance bundles and the impact of the implementing such interventions will be discussed.

KS 14

NATIONAL APPROACH TO REDUCE HEALTHCARE-ASSOCIATED INFECTION

Marilyn Cruickshank. *Australian Commission on Safety and Quality in Health Care, Australia*

In 2007, the Australian Commission on Safety and Quality in Health Care prioritised a number of national strategies to improve patient safety. One of the priorities was the National Healthcare Associated Infection (HAI) prevention program.

Despite a number of disparate activities there was a serious lack of standardised and strategic approaches to HAI surveillance and infection prevention across the country and few national activities in place. Barriers which required addressing before a sustained national program could take shape included the lack of a cohesive national voice on infection prevention, and the absence of a forum for discussion by state surveillance organisations;

The approach taken by the Commission was to address gaps identified though a comprehensive consultation with clinicians, learned societies and policy makers. The consultation laid the foundation for a number of committees that oversaw the development and implementation of key national projects. The first major task was to provide consensus recommendations, agreed to by experts, and endorsed by policy makers and health ministers.

This approach of bridging policy with practice has been one of the most successful strategies in establishing a national infection prevention program. The philosophy of the Australian HAI program has been to put good policy into practice and good practice into policy.

The projects to improve patient safety included the following key initiatives:

- the development of consensus definitions for national surveillance activities
- the development and implementation of national infection control guidelines
- promotion of standardized hand hygiene auditing and training
- building clinician capacity
- augmentation of antimicrobial stewardship

Strategies that supported improvement in patient safety included:

- establishing governance and management systems
- establishing multi-stakeholder advisory committees
- monitoring and public reporting
- implementation strategies based on the principles of quality improvement
- development of resources and educational programs
- teamwork and networking with clinicians and policy makers
- leadership and master classes

While the application of the national HAI programs set the stage for improvement, the key to ensuring implementation has been the mandatory accreditation process through the National Safety and Quality Health Service Standards (NSQHS) which now applies to every hospital, day procedure unit, and dental practice. The NSQHS are considered essential to improving the safety and quality of care for patients, and provide a clear statement about the level of care that can be expected from health services. The NSQHS

Standards includes Standard 3 "Preventing and Controlling Healthcare Associated Infections". The intent of Standard is to:
"Prevent patients from acquiring preventable healthcare associated infections and effectively manage infections when they occur by using evidence-based strategies".
The NSQHS Standards are being implemented in all public and private hospitals and day procedure centres in Australia.

KS 15

INFECTION CONTROL 2025

Andreas Voss. *CWZ & RUMC, Nijmegen, The Netherlands*

In the talk the personal opinion of the speaker with ragd to infection control and its development over the next 10 years. The talk will be centered around 6 main topics:

- Basics are the new black
- MDRO — are they all equal?
- Regional efforts
- Perceptions (Infection Control vs Clinicians)
- Less is more! (Guidelines)
- Help — by design and by patients

The content of the 6 basic principles on which Infection Control should focus will be further explained. In addition other factors might be mentioned, such as: infection control indicators, public reporting (2nd gen surveillance), integration of MMB/ID/AMS/IC at regional levels, remote video assisted behavior change (audits), nanotechnology for surfaces, virtual reality/ serious gaming… for HCWs training, robots/avatars for patients assist

KS 16

THE MANAGEMENT AND A NEW STRATEGY AGAINST CARBAPENEM-RESISTANT *ENTEROBACTERIACEAE* INFECTION

Kazuhiro Tateda, MD, PhD. *Department of Microbiology and Infectious Diseases, Toho University School of Medicine, Tokyo 143-8540, Japan*

Appearance and spreading of antibiotic resistant organisms are everywhere in the world. In Japan, we have still problems of MRSA in the hospital and also recent epidemiological data demonstrated increase of community-associated MRSA not only in healthy individuals but hospital-admitted patients. Not many, but we experienced several outbreaks of multiple drug resitant *Pseudomonas aeruginosa* and *Acinetobacter baumannii* infections. Colistine is now a topic of antibacterial to treat MDR organisms, which was created in Japan for the first time on 1950'. In historical perspective, Japanese pharmaceutical companies have created internationally well accepted and widely used antibiotics, like cephazoline, levofloxacin, clarithromycin, tazobactam/piperacillin and meropenem. But unfortunately, we are facing to a difficulty to produce newer generation of antibacterials, even from those companies that produced golden standard compounds. In this talk, I would like to review several pipelines of antibiotics which were evaluated in vitro, in vivo animal model and clinical trial in some compounds. Some of them were reviewed in ICAAC 2014 in US, as promising agents in poster summary session. In addition, I would like to show some experimental data of antibiotic therapeutic strategies, such as rationale of combination treatment (Break-point checkerboard plate) and inhibitors of metallo-beta-lactamase by zinc-chelating agents.

KS 17

CONTROLLING MULTI-DRUG RESISTANCE

Ian M. Gould. *Royal Infirmary, Aberdeen, United Kingdom*

The question posed by the title is one of the critical issues for health care at present, and surely for all time unless some new ways to control bacteria can be developed.
Resistance would not be an issue were it not for the widespread use of antibiotics so, in the absence of significant new antibiotic development, our efforts must concentrate on reducing selection of resistance and preventing its transmission.
Most experience, and success, has been gained through our efforts to control hospital MRSA, and I will discuss recent experience in the UK, USA and Europe to illustrate several basic principles that might be applied to the control of most multi-resistant organisms.
For many years hospitals tried to control MRSA with "horizontal" measures, that is generic precautions (often known as standard precautions) such as hand washing that it was envisaged would stop spread of many pathogens. Clearly these failed to control MRSA, and as we learnt more about its epidemiology, we were able to design specific (vertical) precautions that specifically targeted the selection and spread of MRSA.
Implementation of such measures in the UK in particular, has been spectacularly successful in controlling MRSA. Universal admission screening for MRSA, patient isolation and decolonization and the avoidance of key antibiotics eg cephalosporins and quinolones have been particularly effective. Adjunctive measures such as improved hand hygiene and environmental decontamination can also play a role.
The application of the same general principles to control of other MDR organisms will likely be effective, if they are targeted to particular aspects of the epidemiology of each organism.

KS 18

HAND HYGIENE PROMOTION AND THE PARTICIPATION OF INFECTION CONTROL LINK NURSES: AN EFFECTIVE INNOVATION TO OVERCOME CAMPAIGN FATIGUE

Patricia Ching, Principal Nurse. *WHO Collaborating Centre on Infectious Disease Epidemiology and Control, The University of Hong Kong, Hong Kong Special Administrative Region*

The WHO has introduced a multimodal methodology for the implementation of the hand hygiene program. After a few years of promotion and implementation, a common problem is campaign fatigue when there is evidence that promotional activities are being ignored and hand hygiene compliance plateau at just 50%. Three methods are often used to overcome this including keep on expanding the campaign, effective linkage to other healthcare programs, and regular reinforcement.
An examples will be presented from the Hong Kong experience. ***(Seto et al AJIC 2013 (41):12: 128)***. Hand hygiene was introduced in the 850-bed Hong Kong Baptist Hospital (HKBH) showing significant improvement in compliance in 2008 from 41% to 58% ($p<0.01$). Subsequently from 2008 to 2011, it persists below the 55% level in spite of active promotional activities, indicating campaign fatigue. HKBH has 99 infection control link nurses (ICLNs) and using focus groups, four key deficiencies were identified and for each, a program was implemented to resolve them. The four programs are as follows:

1. Help your doctor for excellence in Hand Hygiene: To reverse the low compliance among doctors, accompanying nurses squirt alcohol for them during ward rounds.
2. Competition for "Speaking Walls" posters: ICLNs help each ward to produce self-made posters because the present reminders were deemed ineffective. It is believed that self-designed posters will be better reminders.